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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/814,738 | 04/01/2004 | Aravind Dattatrayrao Chinchure | 124557 | 7210 |

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GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH
PATENT DOCKET RM. BLDG. K1-4A59
NISKAYUNA, NY 12309

| EXAMINER | |
|---|---|
| CHUO, TONY SHENG HSIANG | |
| **ART UNIT** | **PAPER NUMBER** |
| 1745 | |

DATE MAILED: 06/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/814,738 | CHINCHURE ET AL. | |
| | Examiner | Art Unit | |
| | Tony Chuo | 1745 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-30 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-30 is/are rejected.

7)☒ Claim(s) 3,10,11,14,19 and 26 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 4/1/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Specification*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

2. The disclosure is objected to because of the following informalities: on page 10 line 4, path "46" should be change to path "44", on page 12 line 10, opening "48" should be change to opening "66". Appropriate correction is required.

### *Claim Objections*

3. Claims 3, 10-11, 14, 19, and 26 are objected to because of the following informalities: the word "conductive" should be changed to "conducting". Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-8, 10, 12, 17-22, 24, and 29-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Katz et al (US 4983472). Regarding claims 1-2, 4-6, 18, 20, and 30, the Katz reference teaches a plurality of fuel cells, each fuel cell "10" comprising: an anode layer "14", a cathode layer "20", and an electrolyte "18" interposed in between; a

separator plate "12" forming an anode interconnect to support the anode layer and a cathode interconnect to support the cathode layer wherein the anode interconnect and cathode interconnect are hollow manifolds comprising a top wall, a first side wall, and a second side wall defining a chamber therein with the top wall comprising an opening extending therethrough in flow communication with chamber; and a conducting layer "22" in intimate contact with the cathode layer "20" wherein the conducting layer is disposed on the cathode layer and the cathode interconnect to reduce the interface resistance between the cathode layer and cathode interconnect and is configured to facilitate transport of electrons from anode and cathode layers (See Figure 1). Regarding claims 3 and 19, it also teaches conducting layer "22" that is substantially hollow (See Figure 1). Regarding claims 7-8 and 21-22, it also teaches hollow manifolds that are configured to provide a flow path for the fuel and oxidant with a separator sheet to separate the flow path of the fuel and oxidant (See Figure 1). Regarding claim 10, it also teaches a conductive layer that has a thickness of 250 microns (See column 3, lines 3-4). Regarding claims 12 and 24, it also teaches a conducting layer that is chemically compatible with the anode and cathode layers such as nickel and stainless steel (See column 2, line 61 to column 3, line 4). Regarding claims 17 and 29, it also teaches a fuel cell assembly having a planar structure (See Figure 1).

### *Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 9 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katz et al (US 4983472) in view of Akikusa et al (JP 2002-237312). The Katz reference is applied to claims 1-8, 10, 12, 17-22, 24, and 29-30 for reasons stated above. However, the reference does not expressly teach a conducting layer that has a shape selected from the group consisting of a mesh, a woven wire, a woven fiber, a felt and combinations thereof. The Akikusa reference does teach a conducting layer "18" that has a shape of a mesh (See paragraph [0012]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Katz conducting layer to include a mesh like shape in order to reinforce and strengthen the conducting layer.

8. Claims 11, 13-16, and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katz et al (US 4983472) in view of Mardilovich et al (US 2004/0081878). The Katz reference is applied to claims 1-8, 10, 12, 17-22, 24, and 29-30 for reasons stated above. However, the reference does not expressly teach a conducting layer that has a thickness of 1 to 50 micron, a conducting layer comprising a material selected from the group consisting of noble metals, metallic alloys, cermets, and oxides, a conducting layer comprising a material selected from the group consisting of gold, silver, platinum, palladium, iridium, ruthenium, rhodium, indium-tin-oxide, ruthenium oxide, rhodium oxide, iridium oxide, and indium oxide, and a fuel cell selected from the group consisting of solid oxide fuel cells, direct methanol fuel cells, and

protonic ceramic fuel cells. The Mardilovich reference does teach current collectors that has a thickness of 1 to 10 microns, a current collector comprising conductive metals, conductive oxides, and conductive cermets and further comprising gold, silver, platinum, palladium, ruthenium, and ruthenium oxide, and a fuel cell that may be one of solid oxide fuel cells, direct methanol fuel cells, and protonic ceramic fuel cells (See paragraphs [0036],[0037],[0042],[0053]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Katz fuel cell to include current collectors that has a thickness of 1 to 10 microns, a current collector comprising conductive metals, conductive oxides, and conductive cermets and further comprising gold, silver, platinum, palladium, ruthenium, and ruthenium oxide, and a fuel cell that may be one of solid oxide fuel cells, direct methanol fuel cells, and protonic ceramic fuel cells in order to advantageously increase the efficiency of the current collector.

9. Claims 13-16 and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katz et al (US 4983472) in view of Hoshino et al (JP 2002-216807). The Katz reference is applied to claims 1-8, 10, 12, 17-22, 24, and 29-30 for reasons stated above. However, the reference does not expressly teach a conducting layer comprising a material selected from the group consisting of noble metals, metallic alloys, cermets, and oxides, a conducting layer comprising a material selected from the group consisting of gold, silver, platinum, palladium, iridium, ruthenium, rhodium, indium-tin-oxide, ruthenium oxide, rhodium oxide, iridium oxide, and indium oxide, and a fuel cell selected from the group consisting of solid oxide fuel cells, direct methanol fuel

cells, and protonic ceramic fuel cells. The Hoshino reference does teach a current collector comprising noble metals, metallic alloys, and oxides and further comprising gold, silver, platinum, palladium, iridium, and rhodium, and a fuel cell comprising a solid oxide fuel cells (See paragraphs [0007],[0013]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Katz fuel cell to include current collectors comprising noble metals, metallic alloys, and oxides and further comprising gold, silver, platinum, palladium, iridium, and rhodium, and a fuel cell comprising a solid oxide fuel cell in order to increase the generation of electrical energy property by at least 1.6 times.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER